S&P 500 Weekly Forecast 12/13

From:	SqueezeMetrics <info@sqzme.co>
To:	SqueezeMetrics <info@sqzme.co>
Subject:	S&P 500 Weekly Forecast 12/13
Date:	Sunday, December 13, 2020 9:03 PM
Size:	360 KB

Hey everyone,

Quick recap.

11/22: "It looks like the vanna-gamma ratio (VGR) actually does a better job at predicting *VIX* than SPX. Hmm."

11/29: "Ok, let's talk more about VIX products. It looks like flat VIX term structure pre-Volmageddon (pre-2/2018) was actually associated with strong SPX gains, whereas post-2/2018, flat VIX term structure was associated with weak SPX gains. Does this mean VIX futures are a lot like SPX puts? Do they "drip" flows into SPX like options' vanna and charm?"

12/6: "VIX actually seems to be telling us about volatility risk *itself* -- which is a risk that even vanilla option dealers can't hedge. This is a risk that's fundamental to the market and truly unhedgable. This isn't the same as SPX puts. So why did we find those weird results in the VIX futures contango?"

Today (12/13):
Why didn't we learn our lesson? On 11/22, we found that VGR predicts VIX really well, but then we went and tested VIX contango against SPX (on 11/29) *without testing it against VIX*. It makes more sense to believe that VIX futures predict *VIX*, and that VIX itself subsequently has impacts on SPX -- not that there's a "direct" link.

The other thing we need to consider is, if VIX is representing "volatility risk" -- that unhedgeable, "buck-stops-here" risk of the S&P 500, then we should be able to see some relationship between VIX and SPX realized volatility -- they can't stray too far from one another for too long. But this time, let's make sure that we're testing the impact of this implied-realized spread *on VIX itself* (and not make the same mistake a third time).

Ok, so below, we're testing (1) Normalized VIX front-month contango vs. subsequent VIX move, and (2) VIX-to-realized-vol spread vs. subsequent VIX move. These two things should both influence VIX, and if they do, we can then add them to our toolkit.

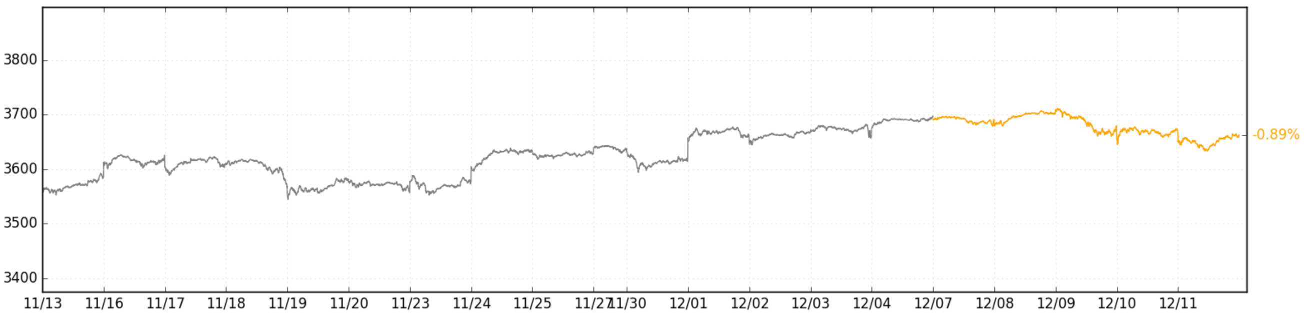
But first...

1. The week that was
2. The week that shall be
3. What were we fighting?

The week that was
Our only position was long December VIX, which we've been hanging on to for a month now. Back in our 11/8 note, we noted that VGR was again in the low negatives, and we expected VIX to go up, on average,

within the next month. Well, on 11/6 (the Friday prior), VIX closed at 24.86, and while VIX indeed achieved a 25 handle this past Friday, it was only briefly -- VIX closed Friday at 23.31. (Contango did not play a factor in purchasing the December VIX future, so we actually bought it in the 24s.)

Since 11/6, the S&P 500 is up 4.4%. That VIX is nearly unchanged, we think, speaks a great deal about how our signal wasn't so bad after all. In theory, a 4.4% gain in SPX should have been met with a substantial loss in a VIX position. Not so.

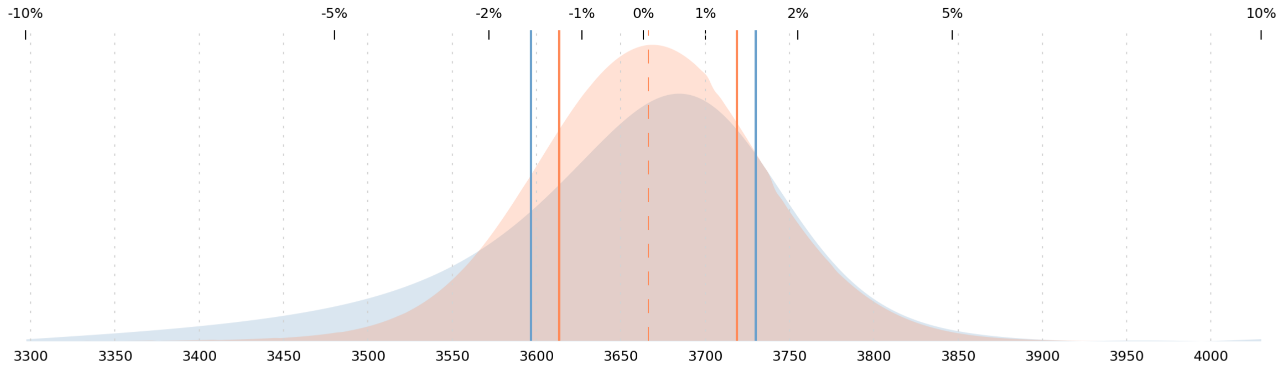


This past week alone, SPX was down 0.89%, but VIX was up around 2.5 points.

You may recall that we finally scaled into a short straddle position this week as well, given that near-term IVs finally expanded. For weeks now, we haven't been able to sell any near-term options, as IVs were far too low relative to the GEX-implied probability density of SPX returns. This has finally changed a bit.

The week that shall be

GEX+ has been unchanged for weeks. Currently at $630mm per SPX point, it's supplying enough liquidity to keep realized volatility as low as it's been, and with an anticipated average daily move of around 0.50% (10 vol). With some historical GEX+ data, we derive the probability densities that you see on the Probability Page, and you'll note that while the 1-day densities of IV and GEX+ are still similar (providing no edge on the 1-day timeframe), the 1-week IVs are a bit too high -- providing us with the biggest slice of edge we've seen in over a month.



Note that the market believes a left tail event it much, much more likely than GEX+ believes, even though they agree on the likelihood of a right tail event. Taken together, this means that we want to bet on the left tail not happening, and on either a small weekly gain or a small weekly loss (+/-1.50% or less). This should give us a small edge.

How small? Let's run this probability density through the Juice algo to see how large a position would be "optimal." With our go-to position, a 100-wide iron fly centered at spot (**+3560p -3660p -3660c +3760c**), the algo tells us that if a $1mm portfolio were to sell 51 of these flies, it could expect a **1.40%** average rate of return on the week.

That's not great. Often, by widening the spread, you can improve the rate of return. By widening the wings to 150-wide (**+3510p -3660p -3660c +3810c**), the algorithm recommends we sell 46 spreads, and that we should expect an average return of **2.02%** for the week. Better.

We'll hold on to our small SPX straddle struck at 3670 for Friday. There is edge in it, though not much.

Another consideration is that DIX printed 47.3% on Friday. This is bullish, and in the current volatility environment would predict something like another 4.4% return over the next month for the S&P, on average.

Another is that NPD printed -5.21, suggesting marginal put-buying (neutral to supportive of SPX), and VGR printed -3.32, which is still tenuous (you'd want it below -5 for "stability"), but it makes long VIX somewhat less appealing. We managed to scale out of some December VIX on Friday, but we will exit the remainder tomorrow, for a loss.

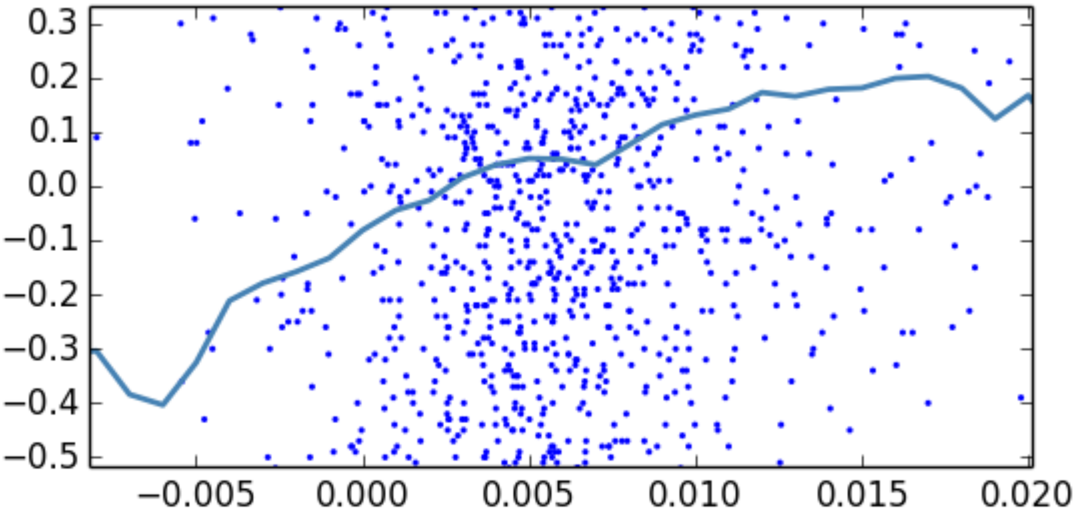
What were we fighting?

We were long December VIX for a month based on our VGR signal. This signal led us to [frankly] incredible gains back in late October and early November, where we timed our vol trades perfectly. Then we got stuck on a trade that bled.

We said we'd test two things here.

> (1) Normalized VIX front-month contango vs. subsequent VIX move, and (2) VIX-to-realized-vol spread vs. subsequent VIX move. These two things should both influence VIX, and if they do, we can then add them to our toolkit.

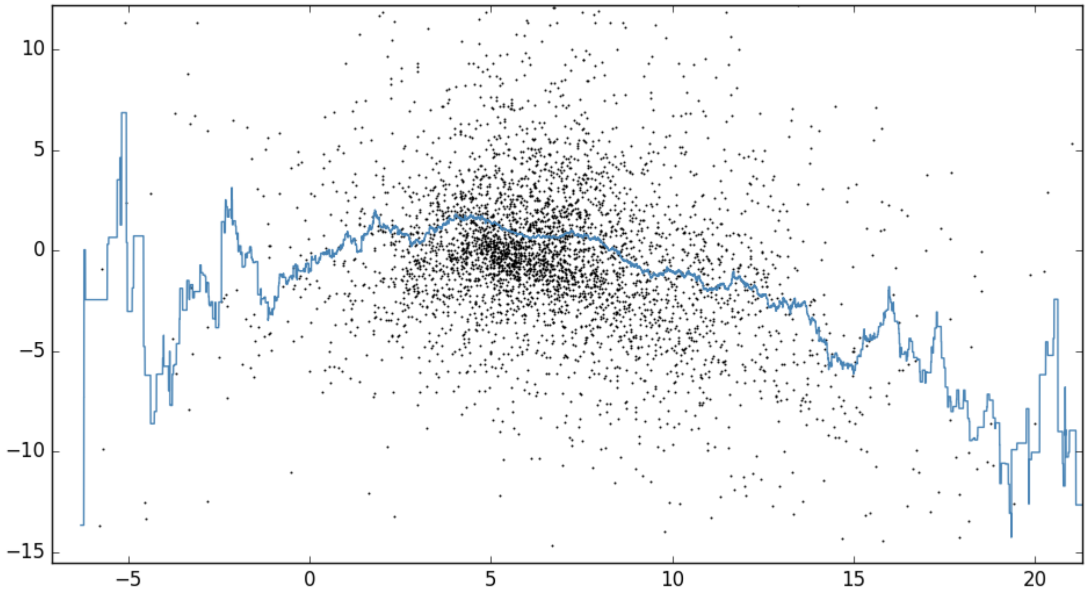
Our guess is that we were fighting one or both of these things when we had that VIX trade on. The first candidate is contango. What does contango in VIX futures do to spot VIX? In the plot below, X is front-month contango expressed in "daily decay," and Y is 1-day change in spot VIX.



The line is the mean of the data, which suggests that steeper contango (>0.000) draws VIX higher by 0.1 to 0.2 points per day, and backwardation (<0.000) actually pulls VIX lower (though that data is, of course, sparse). The effect is small, but very clearly present.

Since the December VIX contract has spent most of the last month in contango, this effect doesn't seem to have been our undoing.

So how about the spread between VIX and 30-day realized SPX volatility? How does that impact VIX? Let's plot those together against 1-month change in VIX.



Here, X is the VIX premium to realized and Y is 1-month change in VIX. The data is very clear -- when VIX is higher relative to realized, the tendency is for VIX to fall. The larger the spread, the more VIX falls to meet realized.

Back when we initiated our long VIX position, this spread was around 10. This may have been a bit of a headwind for our strategy here, and if we were to take this data into account, we would have waited at least another week before initiating our long vol position -- and that would have turned out better for us. Experienced VIX practitioners will no doubt chime in to say that the VIX futures themselves will factor in some of these phenomena in their pricing relative to spot. Certainly... and that's something we'll have to follow up on.

In any case, these two simple and intuitive additional VIX data points appear to have predictive value, and when we use them in tandem with our VGR-NPD edge, we're expecting to be able to improve our forecasting.

We'll be expanding upon this over the coming weeks.

Enjoy the week!

The SqueezeMetrics Team